INFOSECTRAIN

OFFENSIVE CYBER SECURITY ENGINEER TRAINING PROGRAM

- 120 hrs of instructor-led Live Online training
- Exam voucher included for EC-Council CEH
- Make you ready for face-off
- Extra Doubt clearing sessions
- Hands on lab

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Learning Path

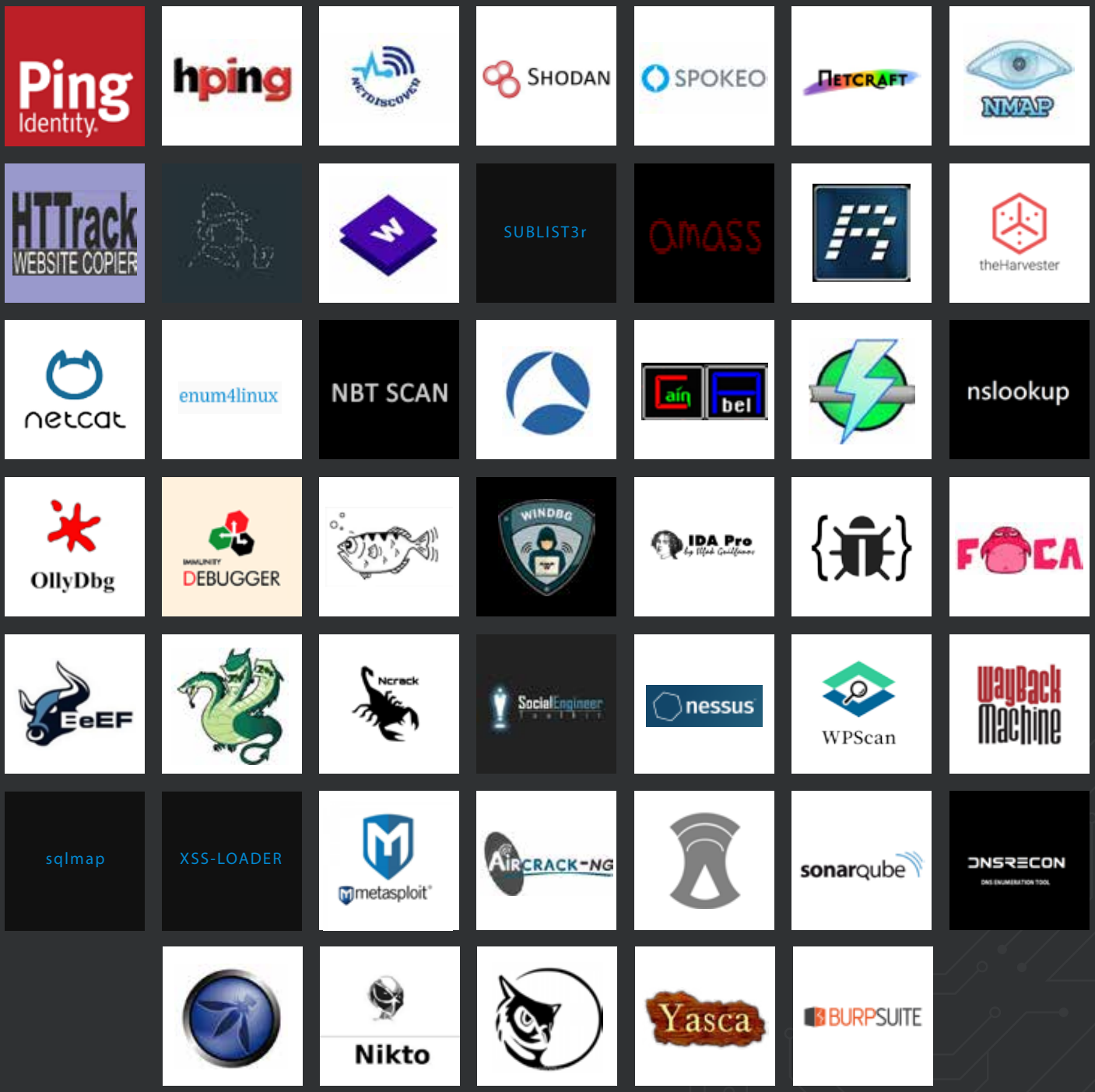
You start here

- Certified Ethical Hacker (CEH)
- Advanced Penetration Testing
- MITRE ATT&CK
- Exploit Development Basics
  (Python Shell Script)
- ISO 27001 Fundamental/PCI-DSS
- Job Interview Preparation
- Review entire job skill set

Offensive Cyber Security Expert

Offensive Cyber Security Engineer

Tools covered



What are the career benefits of this training program?

In order to land into a good job as an Offensive Security Engineer analyst must have a 360-degree view of the cybersecurity domains that comprise a wide variety of components and technology. We have bundled all the

Skill Sets into this Offensive Cyber Security Engineer's program.

What skills will you learn?

At the end of this Master Certificate in Cyber Security Program, you will be equipped with the following skillsets:

- Master advanced hacking concepts to manage information security efficiently.
- Writing your own custom codes.
- Understanding the windows and Linux environment more closely.
- Understand the corporate infrastructure at a different level
- Design security architecture and framework for a secure IT operation.

Pre-Requisite

• Offensive Security Engineering course

• Prior knowledge of Basic Networking Protocols, OS fundamental, Linux basics is recommended.

Security Fundamentals : Eccouncil CEH / CEH (Practical)

This course would be covering the essentials of security, touching base on security terminologies, various attack methodologies and techniques used by offenders/hackers in the real world. Advancing forward, it also covers in-depth, various aspects of the cybersecurity field. The course also provides hands-on experience on various industrial tools used for these purposes.

CEH

Module 01: Introduction to Ethical Hacking
Module 02: Footprinting and Reconnaissance
Module 03: Scanning Networks
Module 04: Enumeration
Module 05: Vulnerability Analysis
Module 06: System Hacking
Module 07: Malware Threats
Module 08: Sniffing
Module 09: Social Engineering
Module 10: Denial-of-Service
Module 11: Session Hijacking
Module 12: Evading IDS, Firewalls, and Honeypots
Module 13: Hacking Web Servers
Module 14: Hacking Web Applications
Module 15: SQL Injection
Module 16: Hacking Wireless Networks
Module 17: Hacking Mobile Platforms
Module 18: IoT Hacking
Module 19: Cloud Computing
Module 20: Cryptography

Advanced Pentest : InfosecTrain APT

This is an advanced level course designed by experts for InfosecTrain. The course imparts a very high level of understanding of various components of infrastructure, including OS, IDS/IPS, firewalls, etc., determining vulnerabilities in these systems and using them to break into a secured system without being discovered. The course also focuses on providing an understanding and usage of a variety of tools.

Domain 1: Planning and Scoping

1.1 Explain the importance of planning for an engagement.

- Understanding the target audience
- Rules of engagement
- Communication escalation path
- Resources and requirements
  - Confidentiality of findings
  - Known vs. unknown
- Budget
- Impact analysis and remediation timelines
- Disclaimers
  - Point-in-time assessment
  - Comprehensiveness
- Technical constraints
- Support resources
  - WSDL/WADL
  - SOAP project file
  - XSD
  - Sample application requests

- SDK documentation
- Swagger document
- Architectural diagrams

1.2 Explain key legal concepts.

• Contracts
- SOW
- MSA
- NDA

• Environmental differences
- Export restrictions
- Local and national government restrictions
- Corporate policies

• Written authorization
- Obtain signature from proper signing authority
- Third-party provider authorization when necessary

1.3 Explain the importance of scoping an engagement properly.

• Types of assessment
- Goals-based/objectives-based
- Compliance-based
- Red team

• Special scoping considerations
- Premerger
- Supply chain

• Target selection
- Targets
  - Internal
    - On-site vs. off-site
  - External
  - First-party vs. third-party hosted
  - Physical
  - Users
  - SSIDs
  - Applications
- Considerations
  - White-listed vs. black-listed
  - Security exceptions
- Supply chain

• Threat actors
- Adversary tier
  - APT
  - Script kiddies
  - Hacktivist
  - Insider threat
- Capabilities
- Intent
- Threat models

- IPS/WAF whitelist
- NAC
- Certificate pinning
- Company's policies

• Strategy
- Black box vs. white box vs. gray box

• Risk acceptance

• Tolerance to impact

• Scheduling

• Scope creep

1.4 Explain the key aspects of compliance-based assessments.

• Compliance-based assessments, limitations, and caveats
- Rules to complete assessment
- Password policies
- Data isolation
- Key management
- Limitations
  - Limited network access
  - Limited storage access

• Clearly defined objectives based on regulations

Domain 2: Information Gathering and Vulnerability Identification

2.1 Given a scenario, conduct information gathering using appropriate techniques.

- Scanning
- Enumeration
  - Hosts
  - Networks
  - Domains
  - Users
  - Groups
  - Network shares
  - Web pages
  - Applications
  - Services
  - Tokens
  - Social networking sites
- Packet crafting
- Packet inspection
- Fingerprinting
- Cryptography
  - Certificate inspection
- Eavesdropping
  - RF communication monitoring
  - Sniffing
    - Wired
    - Wireless
- Decompilation
- Debugging
- Open Source Intelligence Gathering
  - Sources of research
    - CERT
    - NIST
    - JPCERT
    - CAPEC
    - Full disclosure
    - CVE
    - CWE

2.2 Given a scenario, perform a vulnerability scan.

- Credentialed vs. non-credentialed
- Types of scans
  - Discovery scan
  - Full scan
  - Stealth scan
  - Compliance scan
- Container security
- Application scan
  - Dynamic vs. static analysis

- Considerations of vulnerability scanning
  - Time to run scans
  - Protocols used
  - Network topology
  - Bandwidth limitations
  - Query throttling
  - Fragile systems/non-traditional assets

2.3 Given a scenario, analyze vulnerability scan results.

- Asset categorization
- Adjudication
  - False positives
  - Vulnerabilities
  - Observations
  - Lack of best practices
- Prioritization of vulnerabilities
- Common themes

2.4 Explain the process of leveraging information to prepare for exploitation.

- Map vulnerabilities to potential exploits
- Prioritize activities in preparation for penetration test
- Describe common techniques to complete attack
  - Cross-compiling code
  - Exploit modification
  - Exploit chaining
  - Proof-of-concept development (exploit development)
  - Social engineering
  - Credential brute forcing
  - Dictionary attacks
  - Rainbow tables
  - Deception

2.5 Explain weaknesses related to specialized systems.

- ICS
- SCADA
- Mobile
- IoT
- Embedded
- Point-of-sale system
- Biometrics
- Application containers
- RTOS

Domain 3: Attacks and Exploits

3.1 Compare and contrast social engineering attacks.

- Phishing
  - Spear phishing
  - SMS phishing
  - Voice phishing
  - Whaling
- Elicitation
  - Business email compromise
- Interrogation
- Impersonation
- Shoulder surfing
- USB key drop
- Motivation techniques
  - Authority
  - Scarcity
  - Social proof
  - Urgency
  - Likeness
  - Fear

3.2 Given a scenario, exploit network-based vulnerabilities.

- Name resolution exploits
  - NETBIOS name service
  - LLMNR
- SMB exploits
- SNMP exploits
- SMTP exploits
- FTP exploits
- DNS cache poisoning
- Pass the hash
- Man-in-the-middle
  - ARP spoofing
  - Replay
  - Relay
  - SSL stripping
  - Downgrade
- DoS/stress test
- NAC bypass
- VLAN hopping

3.3 Given a scenario, exploit wireless and RF-based vulnerabilities.

- Injections
  - SQL
  - HTML
  - Command
  - Code
- Authentication
  - Credential brute forcing
  - Session hijacking
  - Redirect
  - Default credentials
  - Weak credentials
  - Kerberos exploits
- Authorization
  - Parameter pollution
  - Insecure direct object reference
- Cross-site scripting (XSS)
  - Stored/persistent
  - Reflected
  - DOM
- Cross-site request forgery (CSRF/XSRF)
- Clickjacking
- Security misconfiguration
  - Directory traversal
  - Cookie manipulation
- File inclusion
  - Local
  - Remote
- Unsecure code practices
  - Comments in source code
  - Lack of error handling
  - Overly verbose error handling
  - Hard-coded credentials
  - Race conditions
  - Unauthorized use of functions/unprotected APIs
  - Hidden elements
  - Sensitive information in the DOM
  - Lack of code signing

3.5 Given a scenario, exploit local host vulnerabilities.

- OS vulnerabilities
  - Windows
  - Mac OS
  - Linux
  - Android
  - iOS

- Unsecure service and protocol configurations
- Privilege escalation
  - Linux-specific
    - SUID/SGID programs
    - Unsecure SUDO
    - Ret2libc
    - Sticky bits
  - Windows-specific
    - Cpassword
    - Clear text credentials in LDAP
    - Kerberoasting
    - Credentials in LSASS
    - Unattended installation
    - SAM database
    - DLL hijacking
    - Exploitable services
    - Unquoted service paths
    - Writable services
    - Unsecure file/folder permissions
    - Keylogger
    - Scheduled tasks
    - Kernel exploits
- Default account settings
- Sandbox escape
  - Shell upgrade
  - VM
  - Container
- Physical device security
  - Cold boot attack
  - JTAG debug
  - Serial console

3.6 Summarize physical security attacks related to facilities.

- Piggybacking/tailgating
- Fence jumping
- Dumpster diving
- Lock picking
- Lock bypass
- Egress sensor
- Badge cloning

3.7 Given a scenario, perform post-exploitation techniques.

- Lateral movement
  - RPC/DCOM
    - PsExec
    - WMI
    - Scheduled tasks
  - PS remoting/WinRM
  - SMB
- Persistence
  - Scheduled jobs
  - Scheduled tasks
  - Daemons
  - Back doors
  - Trojan
  - New user creation

- RDP
- Apple Remote Desktop
- VNC
- X-server forwarding
- Telnet
- SSH
- RSH/Rlogin

• Covering your tracks

Domain 4: Penetration Testing Tools

4.1 Given a scenario, use Nmap to conduct information gathering exercises.

- SYN scan (-sS) vs. full connect scan (-sT)
- Port selection (-p)
- Service identification (-sV)
- OS fingerprinting (-O)
- Disabling ping (-Pn)
- Target input file (-iL)
- Timing (-T)
- Output parameters
  - -oA
  - -oN
  - -oG
  - -oX

4.2 Compare and contrast various use cases of tools.

(**The intent of this objective is NOT to test specific vendor feature sets.)

- Use cases
  - Reconnaissance
  - Enumeration
  - Vulnerability scanning
  - Credential attacks
    - Offline password cracking
    - Brute-forcing services
  - Persistence
  - Configuration compliance
  - Evasion
  - Decompilation
  - Forensics
  - Debugging
  - Software assurance
  - Fuzzing
    - SAST
    - DAST
    - WinDBG
    - IDA
  - Software assurance
    - Findbugs/findsecbugs
    - Peach
    - Dynamo
    - AFL
    - SonarQube
    - YASCA
  - OSINT
    - Shodan
    - Maltego
    - Recon-NG
    - Censys
  - Wireless
    - Aircrack-NG
    - Kismet
    - WiFite
- Tools
  - Scanners
    - Nikto
    - OpenVAS
    - SQLmap
    - Nessus
  - Credential testing tools
    - Hashcat

- Medusa
- Hydra
- Cewl
- John the Ripper
- Cain and Abel
- Mimikatz
- Patator
- Dirbuster
- W3AF

- Debuggers
  - OLLYDBG
  - Immunity debugger
  - GDB
  - Whois
  - Nslookup
  - Foca
  - Theharvester
  - Hping

- Mobile tools
  - Androzer
  - APKX
  - APK studio

- MISC
  - Searchsploit
  - Powersploit
  - Responder
  - Impacket
  - Empire
  - Metasploit framework

- Web proxies
  - OWASP ZAP
  - Burp Suite
- Social engineering tools
  - SET
  - BeEF
- Remote access tools
  - SSH
  - NCAT
  - NETCAT
  - Proxychains
- Networking tools
  - Wireshark

4.3 Given a scenario, analyze tool output or data related to a penetration test.

- Password cracking
- Pass the hash
- Setting up a bind shell
- Getting a reverse shell
- Proxying a connection
- Uploading a web shell
- Injections

4.4 Given a scenario, analyze a basic script (limited to Bash, Python, Ruby, and PowerShell).

- Logic
  - Looping
  - Flow control
- I/O
  - File vs. terminal vs. network
- Substitutions
- Variables
- Common operations
  - String operations
  - Comparisons
- Error handling
- Arrays
- Encoding/decoding

Domain 5: Active Directory Pentest

5.1 Active Directory Pentest

- Course Introduction and Overview
- Active Directory Overview
- Physical, Logical Active Directory Components
- Building Active Directory Lab

5.2 Attacking Active Directory

- Introduction
- LLMNR Poisoning Overview
- Capturing NTLMv2 Hashes with Responder
- Password Cracking with Hashcat
- LLMNR Poisoning Defenses

5.3 Post-Compromise Attacks

- Introduction
- Pass the Hash / Password Overview
- Cracking NTLM Hashes with Hashcat
- Pass the Hash Attacks
- Kerberoasting Overview
- Kerberoasting Walkthrough
- Kerberoasting Mitigation
- Mimikatz Overview
- Credential Dumping with Mimikatz

Domain 6: Reporting and Communication

6.1 Given a scenario, use report writing and handling best practices.

- Normalization of data
- Written report of findings and remediation
  - Executive summary
  - Methodology
  - Findings and remediation
  - Metrics and measures
    - Risk rating
  - Conclusion
- Risk appetite
- Storage time for report
- Secure handling and disposition of reports

6.2 Explain post-report delivery activities.

- Post-engagement cleanup
  - Removing shells
  - Removing tester-created credentials
  - Removing tools
- Client acceptance
- Lessons learned
- Follow-up actions/retest
- Attestation of findings

6.3 Given a scenario, recommend mitigation strategies for discovered vulnerabilities.

- Solutions
  - People
  - Process
  - Technology
- Findings
  - Shared local administrator credentials
  - Weak password complexity
  - Plain text passwords
  - No multifactor authentication
  - SQL injection
  - Unnecessary open services

- Remediation
  - Randomize credentials/LAPS
  - Minimum password requirements/password filters
  - Encrypt the passwords
  - Implement multifactor authentication
  - Sanitize user input/parameterize queries
  - System hardening

6.4 Explain the importance of communication during the penetration testing process.

- Communication path
- Communication triggers
  - Critical findings
  - Stages
  - Indicators of prior compromise
- Reasons for communication
  - Situational awareness
  - De-escalation
  - De-confliction
- Goal reprioritization

MITRE ATT&CK Red Teaming

This penetration testing course is specific to Active Directory. It focuses on strengthening the AD fundamental concepts. The course further provides an understanding and hands-on of various attacks performed on active directories along with post-compromise enumeration, attack and exploitation techniques.

- Introduction to Mitre ATT&CK
  - MITRE ATT&CK – Cyber Attack Lifecycle
  - Intro to attack.mitre.org
  - Pyramid of pain
- Playing with Mitre
  - MITRE's ATT&CK Matrix
  - MITRE's ATT&CK Navigator
- Testing with Caldera
  - Getting Started with Caldera
  - Automating Adversary Emulation
- Atomic Red Team Test for MITRE-ATT&CK
  - Starting with Atomic Red Team
  - Running Test based on Mitre Framework

EXPLOIT DEVELOPMENT

Exploit Development : Customized

Linux Stack Smashing

• Introduction to the basics of Linux stack overflow vulnerabilities and the require debugging toolset

• Linux fundamentals

• stack overflow exploitation

• Linux exploit mitigations related to stack overflow exploitation

• Understanding Return Oriented Programming

• Learning how to write Linux shellcode from scratch, including cases such as Egghunting, encoding, etc.

ISO 27001 Fundamental /PCI-DSS

- Understanding Standard and regulatory framework
- Fundamental principles of information security
- Information Security Management System (ISMS)
- Understanding Audit Principals
- Understanding Onsite Audit Activities
- Closing an Audit

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